

## ORIGINAL RESEARCH CONTRIBUTIONS

# International Perspectives on Emergency Department Crowding

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### Abstract

The maturation of emergency medicine (EM) as a specialty has coincided with dramatic increases in emergency department (ED) visit rates, both in the United States and around the world. ED crowding has become a public health problem where periodic supply and demand mismatches in ED and hospital resources cause long waiting times and delays in critical treatments. ED crowding has been associated with several negative clinical outcomes, including higher complication rates and mortality. This article describes emergency care systems and the extent of crowding across 15 countries outside of the United States: Australia, Canada, Denmark, Finland, France, Germany, Hong Kong, India, Iran, Italy, The Netherlands, Saudi Arabia, Catalonia (Spain), Sweden, and the United Kingdom. The authors are local emergency care leaders with knowledge of emergency care in their particular countries. Where available, data are provided about visit patterns in each country; however, for many of these countries, no national data are available on ED visits rates or crowding. For most of the countries included, there is both objective evidence of increases in ED visit rates and ED crowding and also subjective assessments of trends toward higher crowding in the ED. ED crowding appears to be worsening in many countries despite the presence of universal health coverage. Scandinavian countries with robust systems to manage acute care outside the ED do not report crowding is a major problem. The main cause for crowding identified by many authors is the boarding of admitted patients, similar to the United States. Many hospitals in these countries have implemented operational interventions to mitigate crowding in the ED, and some countries have imposed strict limits on ED length of stay (LOS), while others have no clear

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plan to mitigate crowding. An understanding of the causes and potential solutions implemented in these countries can provide a lens into how to mitigate ED crowding in the United States through health policy interventions and hospital operational changes.

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Over the past 40 years in the United States, emergency medicine (EM) emerged as a specialty and a unique discipline with its own body of knowledge.<sup>1</sup> Over the same period, there has been a dramatic rise in the number of emergency department (ED) visits, coinciding with a reduction in the number of U.S. EDs and longer lengths of stay (LOS) for ED patients. The result is ED crowding, which was called a major problem by the Institute of Medicine in 2006.<sup>2</sup> More recent literature has detailed the human toll of ED crowding, demonstrating relationships between crowding and negative patient-oriented outcomes, including poorer satisfaction, delays in antibiotics for pneumonia, delays in pain medication for acute painful conditions, and higher rates of medical errors and complications.<sup>3–8</sup>

The majority of studies of ED crowding have originated and focused on U.S. hospitals. High numbers of U.S. visits have frequently been attributed to the health care payment system and how it affects the delivery of medical care outside the ED. When alternative sites are not responsive to the acute needs of ill and injured patients, hospital-based EDs become the safety net for many patients. ED crowding has also been reported in many countries outside the United States, many of which have different payment and care delivery systems.

On behalf of the ED Crowding Interest Group of the Society for Academic Emergency Medicine (SAEM), we sought to provide a series of international perspectives on ED care and crowding in countries outside the United States, with the purpose of determining if experiences of other countries might provide insight into the causes and solutions for crowding in the United States. Each section was drafted by an author with knowledge of the local emergency care system. For each country, there is a brief overview of the payment and primary care system and a description of the extent of ED crowding (if it exists) and any local or national solutions to improve ED crowding. When available, data on the numbers of ED visits and other data on local trends are provided; however, many countries do not currently track ED visits. Table 1 summarizes information on ED crowding from each country.

## AUSTRALIA

Australia has a mixed system of public hospitals that offers free care to all citizens and private hospitals with regulated insurers that cover some but not all costs. For primary care, patients choose their own physicians and can move between providers. The majority of medical care is provided on a fee-for-service basis, with the federal government providing a single payer (“Medicare”), which partially reimburses fees.

Emergency care is concentrated in, but not exclusive to, the public sector.

The past two decades have seen a significant reduction in public hospital beds per population (–18% in the 10 years to 2005/2006)<sup>9</sup> and a major growth in the use of EDs. Studies funded by Australasian College for Emergency Medicine (ACEM) show an ongoing 3.5% annual rise in visits across a wide sample of EDs accredited for training.<sup>10</sup> However, this may underestimate the actual increase, since new (initially unaccredited) departments continue to be built. There has also been significant growth in observation units under control of the ED, but their beds are not reported consistently. ED crowding has been widely recognized in Australia since 1998.<sup>11</sup> It is recognized that boarding is one of the major causes of crowding.<sup>12–14</sup> Even during office hours, boarding patients represent around one-third of ED patient occupancy. Studies from Australia have demonstrated the association between boarding and crowding with waiting times, hospital delays, and mortality.<sup>15–18</sup>

While all levels of the health system have responded to crowding, results have been mixed. EDs have increased streaming of low-acuity care into fast tracks, observation medicine, and best practices for high-volume chief complaints.<sup>19</sup> Hospitals have also focused on the “patient journey,”<sup>20</sup> improved discharge practices, and increasingly empowered EDs to admit patients to the hospital. Governments also have funded additional hospital beds and nursing homes to expand capacity.<sup>21</sup> While some of these measures have been reported as successful, overall crowding in the ED has not substantially improved.<sup>10</sup> No comparative studies are available to make definitive recommendations about which interventions are more effective.

## CANADA

Canada has a universal, publicly funded health care system governed by federal legislation, but implementation and financing is the responsibility of each of the 13 provincial and territorial governments. Most primary care and specialist physicians are paid through the public single-payer system on fee-for-service basis, but increasingly on alternative payment schemes such as salary or hourly rates, especially for emergency physicians.<sup>22</sup>

There are about 12 million ED visits in Canada per year.<sup>23</sup> Population-based ED utilization rates are virtually identical in Canada and the United States.<sup>24</sup> National ED utilization data are not available, but in Ontario, Canada’s most populous province, ED utilization rates remained steady from 1992 to 2004, but more recently increased by about 6% overall.<sup>25</sup> In the 1990s, there was a reduction in hospital beds and ED

Table 1  
A Comparison of Payment Systems, ED Crowding, and Attempts to Mitigate Crowding Across 15 Countries

Country	Health Care/ED Payment Systems	Evidence/Reports of ED Crowding	Practices or Plans to Mitigate Crowding
Australia	Public hospitals: free care; private hospitals: some costs are covered. Most medical care is fee-for-service; government is a single payer "Medicare."	Increased ED visits and crowding: 3.5% annual increase; boarding is the major cause of crowding.	Fast tracks, observation units, best practices, better discharge practices, EDs have power for admission, additional hospital beds/nursing homes.
Canada	Universal publicly funded health care system.	12 million ED visits per year; in Ontario, ED utilization rates steady from 1992 to 2004, but recently increased by 6%.	"ER Wait Times Strategy" in Ontario: performance focused on 90th percentile ED LOS, accountability, incentives, transparency; Vancouver: pay-for-performance to meet ED LOS targets; "Emergency Services and System Capacity" (ESSC) in Edmonton, Alberta: extra capacity in inpatient units, 24/7 bed management, care coordinators, "full-capacity protocol."
Denmark	Universal publicly funded health care system.	ED crowding is not a major problem but may become more prevalent as 2007 guide lines have suggested that most admissions be evaluated in the ED.	Patients discouraged to seek ED care without contacting GP/prehospital care systems; GPs manage patients by phone, refer patients to GP office or ED, send mobile GP to the home. Ambulances have physicians with the option to treat and release patients.
Finland	Universal publicly funded health care system.	ED visits have been relatively stable but recently slightly increased at specialist EDs, lower in primary care EDs; when ED crowding does occur it is because of boarding.	Telephone center gives advice for patients with minor complaints; ED triage systems assign "E-class" for patients who are referred to a health center.
France	Universal publicly funded health care system.	Increases in ED crowding: from 1995 to 2005, 64% increase in French ED visits.	2006 SFMU recommendations: alternatives to hospitalization: hospital at home at end of life, redirecting patients to GPs, ED bed management, protocols for specific populations (e.g., pediatrics, psychiatry), creation of temporary units during peak demand, coordination between GP and hospitalist for direct admissions (avoid ED), interdisciplinary ED geriatric and palliative care, multidisciplinary critical care, fast tracks, better personnel management.
Germany	Citizens are required to have health insurance; half is paid by employers. Publicly funded health care for unemployed.	Surveys show increased ED visits (by 4% in 2006 and 8% in 2007).	No national initiatives to reduce ED crowding.
Hong Kong	EDs are part of government hospitals and subsidized by taxes.	Little crowding in 16 of the 17 EDs in Hong Kong; one ED has high levels of ED crowding.	In the 16 less crowded EDs, there is no boarding; complex patients are admitted immediately. In the one crowded ED, many patients are worked up in the ED.

Table 1  
(Continued)

Country	Health Care/ED Payment Systems	Evidence/Reports of ED Crowding	Practices or Plans to Mitigate Crowding
India	Tiering public/private system; care is free or minimal charge in government public hospitals.	Major problems with ED crowding; patients are often admitted and ultimately discharged from the ED; no objective data.	Private sector hospitals: holding units, flexible ward assignments, and improved intrafacility transfers. Public hospitals: encourage utilization of GPs for minor illness.
Iran	Primary care is publicly funded; specialty care by insurance coverage; national health insurance plan in 1992.	ED crowding is a major problem; no statistics.	EM is in development in Iran; no clear policies to reduce crowding.
Italy	Universal publicly funded health care system.	ED crowding a major problem; increases in ED visits 5% to 6% per year for the past 5 years.	See-and-treat strategy in Tuscany, fast-tracks, observation units, bed management, prevention of ED visits for chronic conditions.
Netherlands	Half of health care is paid by taxes and employers, half by insurance; basic insurance available to all.	ED crowding is not a major problem; ED visits rates grow 2% to 4% per year.	24/7 GP services are available.
Saudi Arabia	Universal publicly funded health care system.	ED crowding is a major problem reported by 50% of Riyadh medical directors.	No specific national initiatives to reduce crowding.
Spain (Catalonia)	Universal publicly funded health care system.	Problems with crowding result from ED boarding.	Daily crowding data are collected; meetings occur regularly to propose changes in organization, surge capacity, organized diversion policies. Common actions: sending patients to long-term care facilities, transferring acute patients to other hospitals with vacant beds and opening vacant rooms, converting hospital areas to holding areas, active bed management with increased staffing.
Sweden	Universal publicly funded health care system.	ED crowding is reportedly not a problem.	Extensive GP network; telephone service to manage issues through nurses and doctors; same-day appointments by GPs; GPs are open late hours; patients can be redirected from the ED to other centers; lean principles in the ED.
	Urgent and general medical care is provided by hospital-based urgent care centers or by GPs in the regional clinics.	The cornerstone of this process is an extensive GP + nurse network that handles two million patient visits per year.	This process results in telephone nurse's streaming 60% of patients to self-care, while directing the rest to family practice clinics, urgent care centers, and EDs.
United Kingdom	Universal publicly funded health care system.	Increasing ED visits (14.2 million in 1998–9; 16.5 million in 2008–9).	In 2005, Labour government implemented rule limiting ED LOS to 4 hr; performance publicly reported; hospital leadership responsible for meeting targets. Common interventions: 1) streaming, 2) "see and treat," 3) eliminating formal triage; 4) observation units, 5) starting investigations earlier, 6) hiring more senior ED consultants; expanded roles for advanced practice nurses. The rule was discarded in 2011.

GP = general practice; LOS = length of stay; SFMU = French Society of Emergency Medicine.

closures in some jurisdictions. In an international survey of 11 developed countries in 2010 (Australia, Canada, France, Germany, Netherlands, New Zealand, Norway, Sweden, Switzerland, United States, United Kingdom), Canadians were most likely to report using an ED in the past 2 years (44% vs. 37% in the United States) and the most likely to report waiting 4 hours or more before being treated in the ED (31%, vs. 13% in the United States).<sup>26</sup>

Recently, several Canadian jurisdictions have launched initiatives to address ED crowding. In 2007/2008, Ontario's government launched a province-wide "ER Wait Times Strategy," a multiyear program designed to reduce total LOS and increase patient satisfaction at most EDs.<sup>27</sup> Key principles include clear performance metrics and targets focused on 90th percentile total ED LOS, explicit accountability at the hospital and regional health authorities levels, financial incentives to reward good performance, and transparency through public reporting of performance. As of June 2009, average provincial ED wait times have improved by up to 18%, but improvement has varied widely from hospital to hospital, and acuity-specific ED LOS targets have yet to be met, especially for admitted patients.<sup>28</sup> In 2007, the Vancouver health region launched a pay-for-performance scheme rewarding hospitals for meeting ED LOS targets. Initially four hospitals were targeted, but it has since been expanded. In 2009, the proportion of patients meeting specific targets has improved by 13% to 24% in some hospitals, depending on acuity and disposition.<sup>29</sup> Other initiatives include the "Emergency Services and System Capacity" (ESSC) of Capital Health Region, in Edmonton, Alberta, a package of 15 different initiatives launched in 11 hospitals, including extra capacity in inpatient units in some hospitals, 24/7 bed management offices, care coordinators in inpatient units, and a "full-capacity protocol" at four major hospitals. No explicit ED performance targets were set, and there were no financial incentives for better performance; however, preliminary data suggest that the ESSC has had a negligible effect on ED LOS and crowding in the region.

## DENMARK

In Denmark, the majority of health care services and virtually all ED care is publically financed by the national government through tax revenues. Within their local municipalities, residents select general practitioners (GPs), who provide all primary care and also serve as gatekeepers for hospital and specialty care. The GP organization operates a national off-hours urgent care system that includes a telephone call center staffed by GPs, a network of urgent care clinics located for the most part at hospitals, and mobile GPs who make house calls.

On an annual basis, Danes access hospital-based EDs at a rate of 173 visits per 1,000 inhabitants and the GP-run urgent care system at a rate of 516 contacts per 1,000 inhabitants. ED crowding has not been a problem until now for several reasons. In most parts of the country, patients are discouraged from seeking care directly at a hospital ED without first either contacting

the primary care or "1-1-2" prehospital care systems to request an ambulance. GPs can manage many medical issues over the phone, refer patients to a GP office or to an ED, send a mobile GP to the patient's home, or send an ambulance to take the patient to the hospital. Many ambulances equipped with advanced life support capabilities are staffed by nurse anesthetists or physicians (usually anesthesiologists) who, in addition to stabilizing and transporting patients to hospital, have the option to treat and release patients in the field.

Until recently, primary care or outpatient specialty physicians admitted about 80% of acute hospital inpatients directly to a specific inpatient department, and little diagnostic evaluation or treatment would take place in the ED. This resulted in relatively short LOS in the ED and high rates of inpatient admissions of less than 24 to 48 hours' duration. Between 10 and 20% of inpatient admissions have LOS of 24 hours or less; between 55% and 65% of inpatient admissions have LOS of 72 hours or less.<sup>30</sup> Hospital crowding is common. Approximately 80% of intensive care units (ICUs) are at 100% occupancy on a weekly to monthly basis, resulting in frequent transfers between ICUs and cancellations of scheduled surgeries.<sup>31</sup> A total of 30% of the 169 internal medicine departments were over capacity by 78,000 bed-days during 2005.<sup>32</sup>

Recommendations made in 2007 stipulated that with the exception of a few selected patient groups (e.g., ST-segment elevation myocardial infarction, obstetrics & gynecology), patients with potential for admission should be first evaluated in the ED to determine whether they can be safely treated and then discharged home. Because these recommendations are still in the process of being implemented, the scope of work in the ED has yet not changed dramatically and ED LOS still remains relatively short. As more of the initial management of emergency patients shifts from inpatient wards to the ED, it is expected that EDs will experience an increase in LOS and census and possibly ED crowding in the future.

## FINLAND

In Finland, public primary care is universally available to all residents and is delivered by GPs.<sup>33</sup> Primary care is run by local communal health care systems. A telephone information center is available in most cities that gives guidance on minor medical complaints and refers patients to GPs or hospital services as appropriate. Public hospitals have geographic catchment areas for general acute care, while some specialty care is concentrated to fewer centers. Emergency care delivery consists of hospital-based emergency care, primary sector urgent care services, and prehospital care.

Hospital-based EDs are governed by hospital districts formed by several cities and are responsible for a population of about 20,000 to 200,000 citizens. ED care is financed by communal taxes; there is only a nominal charge of around 15 to 20 Euros to the patient to be seen in an ED. Emergency care is organized by primary care and specialty care physicians, although recently primary care ED centers have been joined to make



larger EDs in close association with specialty care EDs in hospitals. Primary care EDs operate during off hours only. They use triage systems categorizing the patient's urgency to four categories (ABCD) from immediate to 2 hours (door-to-doctor). "E-class" is a patient who is not seen by a doctor at all. E-class patients will get advice from a nurse and be directed to the health center during office hours.

In 2008, there were 890,000 emergency visits to EDs responsible for specialist care (mainly internal medicine, surgery and major trauma, and obstetrics) and 142,000 primary care ED visits during off hours. The number of specialty ED visits has increased somewhat until the past few years and remained stable thereafter. Around 50% of specialty ED patients are discharged home.

Currently, the mean boarding time in Helsinki University Central Hospital is 4 to 8 hours (unpublished data, Veli Pekka Harjola, Helsinki University Central Hospital). When ED crowding does occur in Finland, it is mainly a result of decreasing numbers of beds in hospitals, which has been happening over the past few years. Boarding has led to prolonged LOS in the ED. Inpatient nursing care has also been significantly reduced. Secondary and tertiary care wards often remit their patients to community hospitals for rehabilitation after acute care, which has led to crowding of elderly patients in acute community hospital wards; thus, the entire chain of care is over capacity.

In Finland, there is no ambulance diversion. The use of E-class in triage during the past 2 to 5 years has led to fewer physician contacts in primary care EDs. The Ministry of Social Affairs and Health in Finland published uniform standards for emergency care in 2010.<sup>34</sup>

## FRANCE

French citizens have universal health insurance coverage and are free to navigate and be reimbursed for care in a system that includes solo-based, fee-for service private practice for ambulatory care and public hospitals for acute institutional care. The health insurance system grants people access to the registered health care professional of their choice. There are no gatekeepers regulating access to specialists and hospitals. Between 1990 and 2005, there was a 64% increase in ED visits in France. Emergency calls for the emergency medical services (EMS) system ("SAMU") increase every year. A 24/7 dispatch for EMS across France, similar to the United States 9-1-1 (phone number "15"), is answered by an emergency physician, who in 30% of cases provides only medical advice, but does not send an ambulance for the patient. The rising rate of ED admissions to hospital is partly the result of an increasing population with an increasing number of visits. In 2004, a national study of 150 French EDs found that young men (<15 years old) represented 29% of nonurgent visits.<sup>35</sup> By French law, the ED cannot deny care to patients on the basis of chief symptoms and vital signs.

French opinion leaders have reported that ED crowding will not be alleviated until hospitals adopt a multidisciplinary, systemwide approach focused on solutions to inpatient capacity constraints.<sup>36</sup> Reduction in

admissions is an important aim of ED working policy to overcome the problems of a shortage of inpatient beds, overcrowding, rising costs, and exhausted resources. In 2006, the French Society of Emergency Medicine (SFMU) published recommendations to alleviate ED crowding.<sup>37</sup> These recommendations are included in Table 1.

## GERMANY

In Germany, citizens are required to have health insurance, and approximately half the cost is paid for by employers. The state covers the medical costs for the unemployed. German citizens can freely choose and directly access primary and specialist providers, so coordination of care among physicians is not ideal, and care is fragmented.<sup>38</sup>

Until the 1990s, EDs as known in the United States or the United Kingdom were not well established in Germany. Emergency care in Germany has greatly increased in significance in recent years.<sup>39</sup> Decentralized EDs have been restructured into independent central EDs that have achieved greater professionalism and optimized many internal processes, enabling them to attract larger numbers of patients. Additionally, German emergency care was in the past provided by cooperative practices of physicians in private practice rather than hospitals, but physicians in private practice are increasingly withdrawing from delivering emergency care, partly because of inadequate payment and also general unwillingness to deliver emergency care outside normal working times.<sup>40</sup> As German patients have freedom of choice about physicians, many patients have reacted to this trend by seeking emergency care in hospitals. There are no national statistics on ED use; however, surveys of members of the German Association for Emergency Medicine (DGINA) have shown a rise in visits in German EDs of 4% in 2006 and 8% in 2007, with a total of around 12 million ED visits in 2007.<sup>41</sup> While DGINA believes that ED crowding and longer waiting times are growing issues, the lack of national statistics means that there are currently no reliable national estimates of trends in visit rates.

It is expected that the number of patients in German hospital EDs will rise as long as there is no change in the structure of financial incentives for provision of emergency care by physicians in private practice.<sup>41</sup> Currently there are no national initiatives or programs to reduce waiting times in German EDs. The ideal structure, organization, and patient management in the ED were topics of many scientific meetings in 2009 and 2010. Several large societies presented their "right" way; however, there is currently no clear consensus about the best ways to organize emergency care in Germany.

## HONG KONG

In Hong Kong, patients may elect to seek care in an ED in a public hospital, an outpatient clinic in a private hospital, or an independent private clinic (essentially a private GP service). All EDs in Hong Kong are part of government hospitals and are subsidized by taxes.

Unless someone works for the government or has a special exemption, the charge is HK\$100 (approximately US\$12.80) per visit. All patients are seen regardless of their ability to pay at the time of the ED visit. Patients who come to the public EDs receive all clinical, laboratory, and radiologic assessments and treatment for their HK\$100, including computed tomography (CT) scans. Patients who use the private sector services pay approximately HK\$180 for an initial consultation, which does not include the costs of diagnostic tests or treatment. GP primary care services are poorly developed in Hong Kong, do not provide the same service, and cost more to citizens when compared with ED care in public hospitals. EDs are used frequently in Hong Kong for both emergent and nonemergent conditions.

There are approximately 2 million visits to the 16 public EDs in Hong Kong each year, with an average hospital admission rate between 25% and 30%. All encounters are collected into a centralized database, so there are high-quality data on attendance, waiting times, process times, triage category, ambulance arrival, patient demographics, and disposition. EDs in Hong Kong are organized and there are established programs for emergency care training and research.<sup>42</sup>

Despite large volumes, 16 of the 17 EDs have little crowding, even during peak and critical periods such as influenza and H1N1 pandemics. There are several reasons for this. In the majority of EDs, the rapid processing of cases with simple and straightforward protocols often takes precedence over quality and in-depth management. Complicated cases are simply admitted to the hospital quickly and there is no ED boarding. Hospital management in the 16 hospitals has decided that patients will not board for more than a few hours after the decision to admit. ED crowding is seen as unsafe and is associated with a poor public image, so admissions are very rarely delayed. Observation or emergency wards have been constructed with a bed number equal to one bed for every 10 new patient visits per day. In addition, extra beds have been added in all wards and corridors.

In one ED in Hong Kong, hospital management has deemed it unsafe to manage inpatients on crowded wards and in hospital corridors. There is no delay in admitting category 1 or 2 cases (the most severe); however, category 3 to 5 (the less severe) patients do not take precedence over other patients with nonacute but life-threatening conditions, such as cancer patients requiring surgery who have been admitted on a semi-elective basis. The ED has a team of specialists who monitor and manage triage category 3 to 5 patients waiting for admission, sometimes for up to 5 days or more. They have twice-daily ward rounds and are trained and experienced to manage acute medical and other admissions. However, there is no extra staffing to provide care, and waiting times have become prolonged.

There is no consensus in Hong Kong as to which of these approaches is best for patients. ED providers prefer to work in the less crowded majority of the EDs. But whether boarding patients on poorly supervised, overcrowded wards provides a safer and more efficient service for patients is unclear.

## INDIA

The public sector provides free service to all citizens through a tiered health care infrastructure. In rural areas, there is a health subcenter for every 5,000 population, with a male and female health worker; a primary health center for every 30,000 population with a medical doctor and other paramedical staff; and a community health center for every 100,000 population, with 30 beds and basic specialists. In urban areas, there is an urban health center/urban family welfare center for every 100,000 population. Government hospitals mostly provide free treatment or impose minimal charges. Inpatient treatment charges in government hospitals depend on how much the patient can pay—typically payment is waived for patients below the poverty line. A large portion of the population nevertheless tries to obtain care from the fee-for-service private sector, despite not having the means to pay for it.

Because availability of inpatient beds in public sector hospitals is an issue, often admitted patients are kept in the ED until treated and discharged. Most EDs are not constructed to care for patients in a timely manner. There are often insufficient waiting areas, lack of a triage area, or a triage nurse most of the time. Although crowding in public sector EDs has always been an issue, it has been getting worse over the past decade. Some of this crowding is a result of the number of patients receiving care, as well as the poor quality of health care professionals. The use of the ED for nonurgent health conditions is another contributory factor.<sup>43</sup> A unique source of crowding in India is patient visitors, since most EDs in India do not have restrictions to the family members of the patients. There are no national data on ED visits in India.

To mitigate crowding, private sector hospitals in major cities have introduced holding units, flexible ward assignments, and smoother interfacility transfers. The public sector has instead tried to improve public education and encourage the utilization of family physicians for minor illnesses. However, newer EDs in the public sector have started to take patient flow into consideration and are implementing triage and waiting rooms as a part of the ED. The National Health Policy of 2002 aimed to tackle some of the issues like resource creation, education, legislation, upgrading prehospital and hospital-based care, public awareness, and a change in the attitude of the policy-makers. While the 2009 Indian Society of Critical Care Medicine (ISCCM) guidelines recognize EM as an independent specialty in India, it does not directly mention ED crowding or make any recommendations for interventions to reduce it.<sup>44</sup>

## IRAN

Primary health care (PHC) services are delivered through a nationwide public health care network established in 1984, which is fully financed by public funds. Secondary and tertiary health care is provided at the provincial and specialty hospitals. Secondary and tertiary health care costs are financed through progressive health insurance premiums, which are paid for by each

resident, employers' health tax payments, national insurance institute funds, Ministry of Health budget funds, and consumer participation payments. A national health insurance program was adopted in 1992 that essentially enrolled the entire population, thereby making medical care affordable for almost everyone.

Throughout the country there are 738 general hospitals with an estimated 203,000 available hospital beds, as well as 438 EDs. ED crowding is a major problem in Iran.<sup>45</sup> The most frequent causes include a limitation of inpatient beds and lack of clear guidelines in admitting multispecialty and moribund patients, as well as those with uncertain diagnoses. There are no national statistics on ED crowding in Iran.

There has been no clear policy currently outlined by Iran to handle the issue of ED crowding. Current policies have focused on the development of EM in the country: increasing the number of EDs, the number of EM residency programs, and the number of EM-trained physicians practicing in the ED.<sup>46</sup> The current goal is to increase Iran's ED capacity and capabilities. This addresses some of the issues surrounding ED crowding; however, there is still much more work to be done to reduce ED crowding in Iran.

## ITALY

Health care in Italy is publicly financed through general taxes, and citizens are guaranteed certain services as defined by the "Essential Levels of Care." Essential levels of care are organized in three large areas: prevention, districts, and hospitals, including EDs. Some regions can assure further services if they want. Every person chooses his or her own physician (GP or pediatrician) in the local area, and every person can choose among the hospitals of the whole country.

Crowding is a major issue for Italian EDs. Unpublished data from SIMEU (Italian Society of Emergency Medicine) from July 2010 show that ED visits have grown by 5% to 6% per year over the past 5 years, with 30 million ED visits in 2009. Many hospitals and regional institutions have expressed clearly what a "desirable time of stay" in the ED is (less than 4 hours); however, this is rarely achieved.<sup>47</sup>

A "see-and-treat" strategy is in the advanced phase of study in the region of Tuscany, but at this moment there are no data available.<sup>48</sup> Most of the EDs have adopted a "fast-track system" for minor cases ("white codes") and for specialist evaluation in the hospitals where they are available (ophthalmology, ear, nose, and throat, etc.), which works well.<sup>49</sup> In Italy many of the EDs have observation units, and there was an entire congress dedicated to promoting observation units.<sup>50</sup>

Bed management is just beginning in Italy. Between 2009 and 2010, many regional institutions have written about efforts to improve bed management, but there are no data available on the results.<sup>51</sup> Moreover, there are no national guidelines on "how to do" this and so there are many differences in approaches among hospital administrators. There are some good experiences with discharge rooms in Italy. At a hospital in Siena, Pagliantini et al.<sup>52</sup> reported an increase from 75% to 83% of patients requiring hospital admission who remained more than 4 hours

in the ED. To reduce demand for ED visits, new Italian Sanitary Plan is considering the use of the chronic care model to prevent avoidable ED visits for acute exacerbations of chronic disease.

## THE NETHERLANDS

In the Netherlands, most people are registered with a local GP of their choice, who also provides out-of-office hours service. Access to specialty care, which is usually in a hospital, is through referral from primary care or via the ED. About 50% of health care costs are financed through taxes, paid by employers and employees.<sup>53</sup> This covers the national vaccination program, psychiatric care, long-term hospital care, handicapped care, and nursing homes. All residents are also obliged to have basic private health insurance and are free to take out additional coverage. The basic package, set by law, includes primary and specialist care, hospital stays, dental care up to 21 years of age, hearing aids, and dental prostheses. Insurance companies may not refuse the basic insurance package to any applicant.

There is no national census of ED visits in the Netherlands, but estimates range from 1.9 to 2.2 million visits per year, with an average growth rate of 2% to 4%.<sup>54</sup> Hospitals are required to provide emergency care for all patients, including the uninsured and illegal. ED crowding is not a big issue in the Netherlands. Maximum LOS is counted in hours rather than days, and rarely will people leave without being seen. Ambulance diversions are relatively rare and are always selective (i.e., no ICU beds). The fact that there are 24-hour GP services (4.3 million uses in 2009, of which 42% were telephone consultations) could be an "input-based" reason for less crowding of the Dutch EDs.<sup>55</sup>

## SAUDI ARABIA

Every citizen in Saudi Arabia has access to unlimited, free medical care. The Ministry of Health provides PHC services through a network of health care centers throughout the country. Over the past 20 years, the government has provided support to new projects to ensure that health services are accessible to all people at all levels of care—primary, secondary, and tertiary. The number of PHC centers rose from 1,640 in 1989 to 1,905 in 2006. In 2006, the total number of hospitals increased to 386 with 54,724 beds. In 2006, there were more than 31 million visits to PHC and over 15 million ED visits.

Emergency department crowding has been identified as a challenge to the Ministry of Health, especially at the referral hospitals. Many patients prefer going directly to tertiary hospitals instead of accessing the primary care center and the community hospitals, with the assumption that they will get better care at the tertiary hospitals. A total of 70% of EDs have reported more than 100,000 annual visits.

In a survey of the directors of 10 EDs in the capital city of Riyadh, 50% reported that overcrowding is always a problem in their department, and 40% reported it was often a problem.<sup>56</sup> The most important



causes of overcrowding identified were delays in discharging inpatients (90%), lack of admitting inpatient beds (70%), LOS of admitted patients in the ED (70%), increase in the volume of ED patients (60%), and delay in disposition plan while the patient is in the ED (60%). Recent data from the ED in the King Faisal Specialist Hospital and Research Center found that more than half of patients waited more than 6 hours in the ED after a decision to admit, and 15% waited more than 24 hours. There are no specific national initiatives to reduce crowding.

### CATALONIA (SPAIN)

Each of the 17 autonomous regions in Spain operates medical care independently through the use of local health services. One of the regions in Spain is Catalonia. Patients do not directly pay for services in any of the Catalan Health Service Network, including primary care, hospitals, and other services. All citizens have coverage for emergencies and all the other health care services: acute illness including all kinds of surgery, long-term care facilities, PHC, hospital care, ambulance services, and others.

Across Spain, there were 25 million ED visits in 2008.<sup>57</sup> Most EDs across Spain have a wide variety of technology, including ultrasound and CT. In Catalonia, ED crowding occurs mainly in big, high-technology public hospitals in the cities, especially Barcelona. A recent snapshot of the six general, large Barcelona urban hospitals for 1 day showed them boarding between 10 and 33 patients at 10AM and boarding from 3 to 35 patients for more than 24 hours (unpublished data, Santiago Ferrandiz, government of Spain). Although there are periods of ED crowding because of the fluctuations in patients arriving to ED, the main problem is boarding.

To manage ED crowding, there is a special program that collects daily crowding data. Meetings with hospitals, local and territorial authorities, and representatives of the major hospital groups (public and private) occur on a regular basis to study the situation and make proposals regarding organization, surge capacity, and organized diversion policies. The most common actions are sending patients to long-term care facilities, transferring acute patients to other hospitals with vacant beds, opening closed rooms, and even converting some hospital areas into holding areas. Administrative departments are also more involved in bed management during those periods and provide extra staff, especially nurses.

### SWEDEN

The Swedish health care system is composed of numerous regional primary care clinics and public hospitals, with fewer privately owned facilities. Patients can choose their primary care physician in a public or private setting. The National Health Care System is funded by taxes on Swedish citizens, who pay a relatively small copayment at the time of each visit.

Urgent and general medical care is provided by hospital-based urgent care centers or by GPs in the regional

clinics. Emergency care is provided by larger hospitals with EDs staffed with a variety of specialists, including a growing number of emergency physicians.<sup>58</sup> During the past 20 years, the number of hospital-based EDs has been reduced by a third due to hospital closings. Likewise, the number of inpatient beds is now the lowest in the Organisation for Economic Co-operation and Development (OECD) listings, with 2.1 acute beds per 1,000 inhabitants. However, there is not a major problem with ED crowding in Sweden.

The focus of health care in Sweden is to foster an integrated system where prospective patients are encouraged to assume personal responsibility for their own care. There is a large societal emphasis on prevention, but when patients feel the need for medical attention, they are first encouraged to look for more information over the Web or telephone before seeking care. The goal of the system is to establish a "dialogue" with each patient before he or she visits the ED, so the system can connect the patient with the provider in the health care network that meets the patient's expectations regarding cost, time, and services delivered. The cornerstone of this process is an extensive GP network that handles one million patient visits per two million inhabitants per month. There is also an around-the-clock registered nurse telephone service that receives more than 100,000 calls per month, with dedicated pediatric and adult lines. In addition, primary care nurses and doctors handle many telephone calls, resulting in many patients scheduling same-day visits to GPs. Some of these GPs also are open "after hours" until 22:00 on weekdays and on weekends for "close care" visits from 08:00 until 22:00. This process results in streaming 60% of patients to self-care, while directing the rest to family practice clinics, urgent care centers, and EDs.

Additionally, on arrival to the ED, a patient may be redirected by a nurse or doctor to a care center, instead of the ED. Cost to the patient also helps to control the number of ED visits, although this is limited due to the fact that there is an annual cap on patient payments that is equivalent to the cost of 2.6 ED visits.

Once in the ED, the goal is to determine a disposition within 4 hours, and this now occurs with an 80% success rate. In the past few years, there has been a strong tendency to implement "LEAN health care" principles, designed to increase ED throughput, reducing the importance of triage, and placing greater emphasis on patient flow parameters.

Several EDs have their own inpatient wards to which ED patients can be admitted quickly, greatly increasing throughput within the ED and to an inpatient setting. Unlike the United States, ambulance diversion barely exists in Sweden since it is not seen as solving the problem of ED crowding and is viewed as breaking the continuity of care for patients.

### UNITED KINGDOM

All U.K. citizens have free health care in the National Health Service (NHS) system. Everyone is assigned (or may choose) a GP, who can initiate referrals to specialists or other services. There is a private sector that

some citizens access for selected problems and that requires insurance or out-of-pocket payments.

Although there are a variety of sites for unscheduled care, such as walk-in clinics and after-hour GP clinics, demands on EDs in England continue to rise. Attendances increased from 14.2 million in 1998–1999 to 16.5 million in 2008–2009.<sup>59</sup> Until recently, EDs (formerly known as Accident and Emergency, or A&E) were infamous for their “corridors of shame”: patients lying on trolleys (beds) for 12 or more hours waiting for admission to the hospital and reception areas crowded with patients waiting 6 to 8 hours to see a physician.<sup>60</sup>

In 2000, the Labour government announced that “... by 2004, no one should be waiting more than four hours in accident and emergency from arrival to admission, transfer or discharge ....”<sup>61</sup> Additionally, “From October, 2001, Regional Directors are required to inform Ministers of all trolley waits of over 12 hours (from time to admission to reaching a hospital bed) as they occur,<sup>61</sup> essentially making this violation the sign of a failed institution.” The 4-hour target was implemented in a graduated fashion, with hospitals having to meet it for 90, 94, 96, and finally 98% by January 2005. At each stage, hospitals meeting the target received £100,000. Performance was reported publicly on the Department of Health website, and hospital leadership (not the EDs) were made responsible for meeting the target, with an implication that jobs were on the line. The NHS’s “Emergency Services Collaborative” brought hospital representatives together to exchange best practices for improving flow in the ED and the hospital, but hospitals were free to determine which processes to use. Commonly adopted strategies for the ED include: 1) streaming (separation of major and minor patients); 2) “see and treat” (a single assessment and treatment process usually for minor conditions undertaken by a suitably trained clinician); 3) eliminating formal triage; 4) clinical decision units, where patients requiring more than 4-hour evaluation, but not admission, could be observed “off the clock”; 5) starting investigations earlier (often by nurses); and 6) hiring more senior ED consultants and expanding the roles of advanced practice nurses. Hospitals gave EPs greater admitting rights to inpatient services. However, improvements in admission and discharge planning have proved challenging, and getting admitted ED patients to inpatient beds remains a struggle.<sup>60</sup>

Quarterly data suggest that up to a half of hospitals fail to meet the 4-hour target for 98% of patients, but the majority meet the target for 95% to 97% of patients, and nearly all report meeting it for at least 90%.<sup>62</sup> While close observers would agree that conditions are markedly improved, there is concern that patients who might benefit from additional time in the ED for planning, testing, and treatment are put at risk by this time limit and that there is cheating by back-timing time of departure to within 4 hours.<sup>63,64</sup> Despite lack of definitive evidence of the target’s benefit or harm (most likely a mixture), the recently installed conservative government decided to abolish the target in April 2011.<sup>64</sup> It is being replaced by a new set of quality indicators, which are believed will begin to measure quality and safety of care as well as timeliness.

## DISCUSSION

Of the 15 non-U.S. countries described, ED crowding, long wait times, and prolonged boarding times are common, even among countries with universal publicly funded health insurance. Countries that did not report high levels of ED crowding were those with very robust systems to care for patients outside of EDs, such as in Scandinavian countries. As greater incentives are created for patient-centered medical homes to take responsibility for more acute care services, it is possible that this may achieve a reduction in ED visits.<sup>65</sup> However, Scandinavian countries with robust systems in place may have greater GP capacity than the United States, which has many more specialists. In addition, ED LOS and other measures of ED crowding will become publicly reported measures in the United States, and it is possible that this will create sufficient incentives for hospital administrators to address ED boarding and crowding. There are currently no discussions to impose strict limits on ED LOS in the United States as has been done in the United Kingdom.

In the United States, where ED crowding has been a concern for over 30 years, lack of insurance has frequently been blamed for ED use.<sup>66</sup> This collection of international experiences in Europe, Asia, and other countries in North America would suggest that lack of insurance coverage does not seem to be a major cause of people using ED services for less serious conditions. ED crowding exists in countries where all citizens have their health care paid for by the government. However, countries with more robust prehospital, primary care, and after-hours options for care, as well as a strong ethic to avoid overuse of health care resources, seem less likely to suffer from ED crowding, as is seen in Scandinavian countries. However, in many countries with reportedly strong primary care networks, ED crowding is still a major phenomenon, as is seen in Italy, France, and Saudi Arabia. One of the common themes is the boarding of admitted patients from a lack of access to inpatient beds, and even some Scandinavian countries are reporting increases in ED crowding from boarding.

One of the major factors frequently cited as a cause for ED crowding is “inappropriate use,” and the rise in ED visits is often attributed to use of the ED for problems that could potentially be cared for in a physicians’ office. With so many individuals in countries with good primary care and health insurance coverage making the ED their choice for such complaints, however, perhaps it is time to recast these visits as more “preference-sensitive,” since many patients across so many countries appear to prefer to use EDs over primary care. EDs may not have been originally designed for the treatment of non-life-threatening conditions, but perhaps similarities in global ED demand indicate that EDs fill an important niche otherwise lacking in some of the best-designed and most affordable health care systems. Primary care settings may simply not be able to handle urgent needs that require same-day care, even if they are not life-threatening, and may not be able to provide all the services that are now requisite to evaluating complex conditions.

## SUMMARY

This work suggests commonalities among many countries with regard to the demand for ED services, the causes of crowding, and perhaps some solutions. Both at the individual ED level and at the policy level, we need to start looking outside the United States, and perhaps with a more collective thought process, to figure out how to adapt to this international issue.

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### Call for Papers

#### 2012 Academic Emergency Medicine Consensus Conference

#### “Education Research in Emergency Medicine: Opportunities, Challenges and Strategies for Success”

The 2012 *Academic Emergency Medicine* Consensus Conference, “Education Research in Emergency Medicine: Opportunities, Challenges and Strategies for Success” will be held on May 9, 2012, immediately preceding the SAEM Annual Meeting in Chicago, Illinois. Original papers on the conference topic, if accepted, will be published together with the conference proceedings in the December 2012 issue of *Academic Emergency Medicine*.

A divide has traditionally existed in academic medicine between the educator and the researcher. The goal of this conference is to bridge this gap, by exploring the principles that guide these two allied disciplines to create a unified focus on education research science that will benefit our teachers, our learners and ultimately our patients.

Emergency medicine (EM) educators have long perceived the need for better research to guide the frequent challenges encountered in the academic environment. These include identifying best practice teaching methods, validating assessment tools, evaluating competency, and preventing cognitive errors. Efforts to address these challenges have begun; however the historical use of suboptimal study designs, subjective outcomes, small samples sizes, and lack of expertise in methods useful in other domains can limit the success of education research studies. A coordinated agenda for EM education research is needed to address these topics and streamline our research efforts.

The Accreditation Council for Graduate Medical Education (ACGME) Outcome Project now mandates that training programs demonstrate the effectiveness of educational interventions and show evidence of trainee aptitude and achievement in the core competencies. The American Board of Emergency Medicine (ABEM) now requires its diplomats to provide evidence of Assessment of Practice Performance in order to receive continuous certification. These and other requirements highlight the current paucity of available evidence to inform our instruction and evaluation of emergency physicians, and call for our field to develop high-quality education research.

A systematic approach to education research in EM is essential for the continued improvement of clinical emergency care, even for providers beyond residency training. In the decade since the Institute of Medicine's 2001 “Crossing the Quality Chasm” report identified the failure of health care environments to consistently deliver evidence-based care, the increased emphasis on translational research and patient safety has identified even broader needs for education-based research. Without well-designed studies to investigate the most effective methods to teach and evaluate emergency physicians, scientific discoveries cannot be effectively disseminated to physicians in training or in practice, nor the benefits fully realized by our patients.

This Consensus Conference on Education Research in Emergency Medicine proposes to build a solid foundation upon which EM education researchers can build interdisciplinary scholarship, networks of expertise, discussion forums, multicenter collaborations, evidence-based publications and improved learner education. Such efforts will enable us to make significant contributions to the state of knowledge in medical education and, ultimately, to optimize patient care.

#### **Consensus Conference Goals:**

- Provide an overview of the current state of education research in EM
- Identify and examine the barriers that educators face in conducting well-powered, rigorous education research, and develop recommendations for overcoming these barriers
- Define most appropriate and effective methods for conducting education research studies
- Identify priority agenda areas within specific education research domains, such as:
  - Establishing the effectiveness of clinical and didactic curricula in educating EM trainees in each of the six ACGME core competencies
  - Evaluating performance of learners across the continuum of medical education, from medical student to practicing emergency physician
  - Validating educational assessment tools
  - Teaching and evaluating non-cognitive ACGME core competencies, such as “Professionalism” and “Interpersonal and Communication Skills”
  - Measuring the impact of educational interventions to improve patient safety
  - Research designs conducive to studying education outcomes

Develop a framework to increase collaboration, access to research support and potential funding sources and promote faculty development in education research

Original contributions describing relevant research or concepts on this topic will be considered for publication in the December 2012 issue of *Academic Emergency Medicine* if received by Monday, March 12, 2012. All submissions will undergo peer review and publication cannot be guaranteed. For queries, please contact Nicole Delorio, MD ([deiorion@ohsu.edu](mailto:deiorion@ohsu.edu)), Joseph LaMantia, MD ([JLaManti@nshs.edu](mailto:JLaManti@nshs.edu)), or Lalena Yarris, MD ([yarrisl@ohsu.edu](mailto:yarrisl@ohsu.edu)), Consensus Conference Co-chairs. Information and updates will be regularly posted in *Academic Emergency Medicine*, the SAEM Newsletter, and the journal and SAEM websites.